

Claims

What is claimed is:

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1. In a networked environment containing multiple interconnected nodes, a method for identifying a shortest protectable path between two network elements, said method comprising:

10 a) determining a set of multiple shortest paths between the two network elements; and

b) determining which members of the set of multiple shortest paths are protectable.

15 2. The method in claim 1, wherein each of said steps is performed before a search is made for alternate edge disjoint paths.

20 3. The method in claim 1, wherein each network element to which there is more than one shortest path is marked.

4. The method in claim 3, wherein said determining which members of the set of multiple shortest paths is protectable is accomplished by examining the parent node of each of the members
25 of the set of multiple shortest paths, and selecting those

members of the set of multiple shortest paths for which the parent node is not marked.

5. A method of identifying and selecting a shortest path between two network elements such that said shortest path has an alternate edge disjoint path between the two network elements, said method comprising:

(a) determining a set of multiple shortest paths between a source network element and a set of destination network elements;

(b) marking each member of the set of destination network elements for which there are two or more shortest paths to; and

(c) identifying and selecting a shortest path to a particular destination network element having an edge disjoint alternate path, wherein the shortest path is selected as the path for which the destination element is not marked.

6. The method in claim 5, wherein each of said steps is performed before a search is made for alternate edge disjoint paths.

7. The method in claim 5, wherein said identifying and selecting the shortest path to a particular destination network element is accomplished during and as a part of the generation of

a shortest path tree, and before a search is made for an edge disjoint path.

8. In a networked environment containing multiple interconnected nodes, a method of supporting the routing and provisioning of circuits, the method comprising:

- (a) determining a set of multiple shortest paths between two network elements;
- (b) identifying and selecting as the shortest path between said two network elements, a shortest path which is protectable; and
- (c) identifying at least one alternate edge disjoint path for each of said selected shortest paths.

9. The method of claim 8, wherein said determining a set of multiple shortest paths and said identifying and selecting as the shortest path between said two network elements are performed before a search is made for alternate edge disjoint paths.

10. The method of claim 9, further comprising marking each network element to which there is more than one shortest path, wherein said identifying and selecting as the shortest path is accomplished by examining the parent node of each member of the set of multiple shortest paths and selecting a shortest path for which the parent node is not marked.

11. A computer program embodied on a computer readable medium for establishing a protected route, said computer program comprising:

5 (a) a code segment for determining a set of multiple shortest paths between two network elements; and

(b) a code segment for determining which members of the set of multiple shortest paths is able to be path protected.

10 12. The computer program of claim 11, wherein said code segment for determining a set of multiple shortest paths marks each node to which there is more than one shortest path.

15 13. The computer program of claim 11, wherein said code segment for determining which members of the set of multiple shortest paths is able to be path protected is accomplished by examining a parent node in each of the shortest paths, and selecting a shortest path for which the parent node is not marked.

20 14. The computer program of claim 11, wherein said code segment for determining which members of the set of multiple shortest paths is a part of said code segment for determining a set of multiple shortest paths so the determination of which

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